

Discussion on "XADS/Eurisol Cryomodule - Options for a Highly Reliable Spoke Linac" by Jean-Luc Biarrotte

The first discussion related to the real estate gradient of the low end of the accelerator, right behind the RFQ. This gradient starts out at only 0.3 MV/m and increases through the spoke section to 1 MV/m. This is mainly driven by the fault tolerant short lattice. Facco points out that this high reliability concept was first proposed for TRASCO. The implementation by Legnaro is different however. XADS/Eurisol uses 2-gap spokes with doublet focusing, while TRASCO uses 1-gap (re-entrant) cavities with singlets. The TRASCO implementation is only half as long as the spoke implementation.

Biarrotte next explained that the free space in some of the cryomodules is also resulting from the reliability concept, that uses a continuous lattice length for high beam quality. They are using quads instead of solenoids for focusing. The beam quality is very similar and quads give more flexibility by allowing to independently focus in both transverse planes. The focusing lattice is not independently optimized for the XADS application. This is only done for the demonstration machine. The final ADS machine would have an dedicated optimized lattice.

Pagani pointed out that for the European ADS work the final scheme is still under discussion. While the two main sections above 20-25 MeV are more or less set (2-gap or 3-gap spokes up to 100 MeV and then 2 or 3 different elliptical cavity types), the low energy end up to 20 or 25 MeV is still totally open.